Early Journal Content on JSTOR, Free to Anyone in the World

This article is one of nearly 500,000 scholarly works digitized and made freely available to everyone in the world by JSTOR.

Known as the Early Journal Content, this set of works include research articles, news, letters, and other writings published in more than 200 of the oldest leading academic journals. The works date from the mid-seventeenth to the early twentieth centuries.

We encourage people to read and share the Early Journal Content openly and to tell others that this resource exists. People may post this content online or redistribute in any way for non-commercial purposes.

Read more about Early Journal Content at http://about.jstor.org/participate-jstor/individuals/early-journal-content.

JSTOR is a digital library of academic journals, books, and primary source objects. JSTOR helps people discover, use, and build upon a wide range of content through a powerful research and teaching platform, and preserves this content for future generations. JSTOR is part of ITHAKA, a not-for-profit organization that also includes Ithaka S+R and Portico. For more information about JSTOR, please contact support@jstor.org.

immaterialism. Berkeley was, in the end, a sensationalist and not a thoroughgoing idealist. But it must be pointed out as a counter criticism upon Petzoldt that his fundamental position is also the starting-point for many systems of transcendental idealism. One need not read far in current idealistic systems to find other thinkers starting from this same doctrine of the inseparable correlation of the psychical and the physical world. But while in the positivism of Petzoldt these inseparably correlated worlds are regarded as the ultimate and only reality, representative idealism insists that we are here still in the realm of appearance. Reality has suffered a transformation in order to manifest this correlation. Ultimate reality lies deeper than either of these two realms. It is the world of undifferentiated values that transcends the contrast between the psychical and the physical world.

Dr. Petzoldt shows his close affiliation with pragmatism in many passages. "-Thought is really a biological function. That which can not be logically maintained is also that which biologically has been left behind." This is the crucial question which Petzoldt asks of every philosophy that sets up an absolute over against the relative: "How is this world of appearances, which after all is here and furthermore is under the reign of law, related to that real world?"

Idealists will say that Petzoldt's attempt to make experience self-explanatory is open to precisely the same objections that have always been made to empiricism in whatever form it has manifested itself in the history of philosophy; but they will all welcome his little volume as one of the most important and original contributions to the present pragmatic movement.

C. H. RIEBER.

UNIVERSITY OF CALIFORNIA.

Kinesthetic and Organic Sensations: Their Rôle in the Reactions of the White Rat to the Maze. JOHN B. WATSON. *Psychological Review,* Monograph Supplements, Volume 8, No. 2 (Whole No. 33), May, 1907. Pp. vi + 100.

This paper gives an account of some admirably exact and well-controlled experimental work. In reviewing the content of the monograph I shall first call attention to certain matters of form which seem to me worthy of consideration, and I shall then give a résumé of the important results which the author has presented.

The style of the paper, unfortunately, has many weaknesses. Among them those which must imperatively demand adverse criticism are ambiguity, inappropriate words, and the use of colloquial and slang expressions. That these statements may have the support of instances in point, I quote from the monograph the following examples of the defects which have just been mentioned. On pages 57–58 we read, with extreme discomfort if not with uncertainty regarding the author's meaning, "These results from the experiments on the defective rats confirm those obtained by Dr. Carr and ourselves upon the normal trained rats with the maze in darkness." And again, on page 76, "Showing the average time of two female rats whose vibrissæ had been removed in learning the maze." Marked, as it occurs in the sentence "His behavior was so marked that it deserves mention" (p. 17), seems to me quite inappropriate. And the use of the word graph in "A separate and detailed discussion of this table and its accompanying graph is not necessary" (p. 19) is new, if not undesirable. But far worse, in my opinion, than the ambiguities and ill-fitting words of the paper are the colloquial and slang expressions which the author has chosen to use. No one who is not at home in the English language could fairly be expected to understand the meaning of "the monkey isn't 'in it'"; "all of them are in poor shape"; "as long as the track is straightaway, there is 'full steam ahead'"; "they could do it 'hands down'"; "every rat 'kited' by"; and a number of similar expressions. Surely every scientist is under obligation to write purely as well as precisely. I freely admit that Dr. Watson has used, in many of the cases cited, words or phrases which would be significant for the average American reader, but at the same time I am convinced that the present status of the expressions does not justify their use in scientific literature.

The purpose of the investigation which has been carried on by Dr. Watson and several of his students was to discover whether a maze or labyrinth habit may be acquired by the white rat after it has been deprived of sight, smell, hearing, and the cutaneous senses. The method employed was the removal of the sense organ or its functional impairment by means of an operation, and the subsequent testing of the defective animals in a Hampton Court maze. The records of learning which were made by (1) blind rats, (2) anosmic rats, (3) partially deaf rats, (4) vibrissæless rats, (5) rats which, because of changes in the environmental conditions, were unable to depend upon temperature or tactual sense data, and (6) finally, a rat which was blind, anosmic, and vibrissæless, were compared with those of normal rats. In all except the sixth (6) of the conditions enumerated above, more than one individual was tested. Both the operations and the experiments were carried on with highly intelligent and honest care and insight. Measurement of the process of learning the maze was made, in all cases, in terms of the time which was consumed by the animal in passing from entrance to exit. Undoubtedly the experiments would have been increased in value had Dr. Watson devised a method of recording the number of errors as well as the time of each test. Personally I am of the opinion that it is far better to study the behavior and psychic processes of an animal by changing external conditions than by rendering the animal itself abnormal, pathological, or defective. But for the experiments under discussion I may say that they seem to me as free from objections as they well could be, inasmuch as the vivisectional method was employed.

The importance of the results which this paper presents will be appreciated by students of animal behavior as well as by psychologists. The chief conclusions which have been formulated by the author himself may be briefly stated. "Rats trained to the maze in the light can run it perfectly in the dark; normal rats can learn the maze as readily in the dark as in the light; totally blind rats can learn the maze as readily as normal rats; rats trained to the maze in the light suffer little loss in the accuracy of their adjustments to the maze if deprived of vision" (p. 91). Similar statements hold with respect to smell, and the cutaneous senses. I may quote the author's words concerning the latter. "Cutaneous sensations can not, in our opinion, serve as the basis for making the correct turns in the maze, for the following reasons: (1) the vibrissæ, in all probability the most sensitive part of the cutaneous mechanism, can be dispensed with absolutely without disturbing the reactions of the animal, provided sufficient time is given him to 'wear off' the unpleasant 'affective tone' conditioned by their removal; (2) the experiments with the cooled and heated copper plates show that the slight differences in temperature existing in the maze have no influence upon the selection of a given turn; (3) the direction of the air currents in the maze likewise is without effect upon the selection of the turns; (4) after the application of a local anesthetic to the soles of the feet and to the bare portions of the snout of the rat, his reactions remain unchanged" (p. 91).

Judging from their reactions to food soaked in solutions of cane sugar, tartaric acid, salt or hydrochloric quinine, white rats are far less sensitive to these gustatory stimuli than are human beings. Even a 5 per cent. solution of quinine was not strong enough to cause uniform refusal of the food.

Finally, it should be noted that the rats were confused, and made numerous errors in attempting to follow the path of the maze, after it had been rotated 90° or 180° from the position in which they had been trained to follow the path. Apparently the animals are guided by data of which we have no knowledge through our own experience. Dr. Watson himself believes that "kinesthetic sensations coupled with the organic probably, and possibly with the static," are the guiding data for the white rat in the maze. It may not be inappropriate to suggest that the animal might be able to follow the correct path in the absence of all sensations.

"Kinesthetic and Organic Sensations" is a contribution to comparative psychology which is as valuable for the problems and methods of study which it suggests as for the results which it presents. It marks a noteworthy advance in our knowledge of the conditions of learning in one of the mammals.

ROBERT M. YERKES.

HARVARD UNIVERSITY.

JOURNALS AND NEW BOOKS

REVUE PHILOSOPHIQUE. July, 1907. *L'ordre des sciences* (pp. 1-21): F. LE DANTEC. - From the nature of human development,